Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's	)	
Rules Regarding Ultra-Wideband	)	ET Docket No. 98-153
Transmission Systems	)	

REPLY COMMENTS OF SOUTHWESTERN BELL WIRELESS, INC.

I. Introduction

Southwestern Bell Wireless, Inc. ("SWBW") hereby replies to selected comments filed in the above-captioned proceeding relating to the possible operation of ultra-wideband ("UWB") devices on an unlicensed basis under Part 15 of the Rules of the Federal Communications Commission ("Commission").

II. UWB Devices, Radiating in Cellular and PCS Bands, May Affect the Ability of Wireless Callers to Make and Receive Calls, Including Emergency Calls

Parties submitting comments in response to the Notice of Inquiry ("NOI") describe the variety of useful devices, both existing and potential, that employ UWB technology. UWB technology does have many beneficial uses, and more uses are likely to be found as the technology matures. Certain UWB devices, however, if allowed to become "ubiquitous," could adversely affect *existing* wireless communication links that the public is increasingly utilizing for day-to-day telephony, including emergency calls.

Over 100 million wireless calls are made in the United States every day, and over 80,000 of these calls are emergency calls. A wireless caller can initiate a call only if the signal from the cellular or PCS base station, as seen by the phone, is sufficiently higher

than noise seen by the phone. More quantitatively, the sensitivity of an analog phone is specified as –116 dBm at 12 dB SINAD (Signal to noise-plus-distortion). This specification is based on the fact that the thermal noise level of the phone is around –128 dBm (at 30 kHz bandwidth).

Some UWB devices, if near enough to a cellular or PCS phone, could raise the noise floor of the phone sufficiently to prevent call initiation. This can occur even if the signal from the device appears to be broadband noise. As noted by Lawrence Livermore National Laboratory ("LLNL") "Ensuring that emissions appear to be broadband noise is probably not sufficient to protect other users since broadband noise of sufficient amplitude will still disrupt operations." (Comments of LLNC, p. 5)

To quantify this concern, consider a device whose bandwidth and output power are representative of some UWB devices mentioned in the comments and in previous Petitions for Waivers (see NOI, para. 6):

Center frequency = 2 GHz
Signal bandwidth = 2.5 GHz
Output EIRP = 0 dBm (1 milliwatt)

Such a device, radiating into a cellular phone having a 2 dBi antenna, would create, in a 30 kHz bandwidth centered at 880 MHz, a noise level of ~105 dBm at a distance of 3 meters and ~96 dBm at a distance of one meter. If the caller was in an area where base station signals were around –100 dBm, the UWB device would block the call, which otherwise would have been initiated.

SWBW is not suggesting that UWB represents a threat to cellular telephony. Most existing and proposed UWB devices, such as the impulse radars and military or law enforcement communications systems, would operate only intermittently and "non-

ubiquitously." Other proposed applications do raise some concern, however. Low Tech Designs, Inc., for example, mentions the possibility of "last mile connections" and "high speed digital local area networks between homes and businesses sharing a common and closely aligned geographic proximity." (Comments of Low Tech Designs, Inc., paras. 3 and 5) Such "ubiquitous" applications increase the possibility of noise-blocked wireless calls.[1]

III. Interference with Global Positioning System ("GPS") Receivers is a Serious Concern

The U.S. GPS Industry Council and TEM Innovations raise significant concerns in their comments. TEM Innovation asserts that "GPS operates at a very low margin above the thermal noise floor and is very susceptible to UWB impulses upsetting its moderate bandwidth raw data....The proliferation of UWB systems will ensure the widespread, *total* failure of the Global Positioning System." (Comments of TEM Innovations, p. 7) In a similar vein, the U.S. GPS Industry Council maintains that "Any increase in the basic noise floor will significantly reduce the ability of the receiver to acquire a GPS signal or even to maintain tracking of a GPS signal, or cause errors in position or time accuracy. *Any of these consequences is intolerable to the GPS user segment.*" (Comments of U.S. GPS Industry Council, p. 4)

Several handset manufacturers have announced the intention to install GPS receivers in wireless phones; five to ten years from now many new cellular/PCS handsets likely will have GPS capability. GPS receivers in these handsets may supply

[1] Ubiquitous deployment of UWB devices also could adversely affect residential wireless devices such as radios, standard television receivers, satellite television receivers, and upcoming satellite data receivers used for internet access.

emergency caller location information to emergency call-takers,[2] making GPS performance critical to prompt emergency response. The Commission should carefully consider any possibility that widespread deployment of UWB devices could adversely impact performance of GPS receivers.

IV. Conclusion

While SWBW recognizes the existing and potential benefits of UWB technology, many questions regarding the impact of UWB devices on other wireless services are unanswered. We urge that the Commission *not* move quickly to change the Part 15 Rules. SWBW supports the recommendation of the American Radio Relay League, Inc. ("ARRL") that ".....some experience with these [UWB] devices is necessary before operational rules can be developed.....[T]hese devices have a substantial potential interference characteristic.....The League recommends that significant time and analysis precede any specific rule change and that these systems should be addressed by waiver until a track record of non-interference, or interference resolution, is established." (ARRL Comments, paras. 5 and 7)

Respectfully Submitted,

SOUTHWESTERN BELL WIRELESS, INC.

By: Jeanne Fischer

Jeanne A. Fischer
Bruce E. Beard
13075 Manchester Road
St. Louis, MO 63131
(314) 984-2307

[2] While wireless callers can be located by means other than GPS, in the long run GPS may be the preferred method.

Certificate of Service

I, Jeanne A. Fischer, of Southwestern Bell Wireless, Inc. hereby certifies that a copy of the foregoing Reply Comments was mailed U.S. first class mail, postage pre-paid or otherwise hand-delivered to all parties of record on this 3rd day of February, 1999.

Jeanne A. Fischer

Jeanne A. Fischer

Dated:

SPARTA, Inc.
12443 Research Pkwy
Orlando, FL

Attn: James W. Watson, PhD
Simulation Technology Division

Low Tech Designs, Inc.
1204 Saville Street
Georgetown, SC 29440

Attn: James M. Tennant, President

Leventhal, Senter & Lerman
2000 K Street, N.W.
Suite 600
Washington, DC 20006

Attn: Paul R. Rodriguez
Stephen D. Baruch

TEM Innovations
P.O. Box 10601
Pleasanton, CA 94588-0601

Attn: Thomas E. McEwan, Principal

BOOTH FRERET IMLAY & TEPPER, P.C.
5101 Wisconsin Avenue, NW Suite 307
Washington, DC 20016-4120

Attn: Christopher D. Imlay

Broadband Telecom Systems
600 Bellevue Way SE Suite #102
Bellevue, WA 98004

Attn: Steven D. Warwick

Community Technology Centers' Network
Education Development Center
55 Chapel Street
Newton, MA 02458-1060

Attn: Holly M. Carter, PhD
Peter Miller

Technos Inc.
Consultants in Applied Earth Sciences
3333 Northwest 21st Street
Miami, FL 33142

Attn: Richard C. Benson

Arthur D. Little Inc.
Acorn Park
Cambridge MA 02140-2390

Attn: Dr. Hugh Burchett

Geophysical Survey Systems, Inc.
13 Klein Drive P.O. Box 97
North Salem, NH 03073-0097

Attn: Dennis J. Johnson
Alan E. Schutz

SAAB
Saab Marine Electronics AB
Box 13045
SE-402 51 Goteborg
Sweden

Gardner, Carton & Douglas
1301 K Street, N.W.
Suite 900, East Tower
Washington, D.C. 20005

Attn: Russ Taylor

Endress + Hauser GmbH + Co.
Division Level + Pressure U.S.A.
2350 Endress Place
Greenwood, IN 46163

Attn: Dr. G. Klotz-Engmann
Don Cummings

Consumer Electronics Manufacturers Association
2500 Wilson Boulevard
Arlington, VA 22201

Attn: Gary Klein
Michael Petricone

Squire, Sanders & Dempsey L.L.P
1201 Pennsylvania Aenue, N.W.
Washington, D.C. 20044-0407

National Association of Broadcasters
1771 N Street, N.W.
Washington, D.C. 20036

Attn: Henry L. Baumann
Jack Goodman
Barry D. Umansky
Kelly Williams
Dave Wilson

M/A-COM
P.O. Box 3295
1011 Pawtucket Boulevard
Lowell, MA 01853-3295

Attn: Daniel K. Schramm

Jeffrey Krauss
Consultant to M/A-COM
622 Hungerford Drive Suite 21
Rockville, MD 20850

Fish & Richardson P.C.
601 13th Street, N.W.
Washington, DC 20005

Attn: Terry G. Mahn

Pulson Medical, Inc.
#540
7910 Woodmont Avenue
Bethesda, MD 20814

Dwain K. Butler, PhD
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

Wireless Information Networks Forum
1200 19th Street, NW
Suite 300
Washington, DC 20036-2422

U.S. Department of Energy
Lawrence Livermore National laboratory
P.O. Box 808
Livermore, CA 94551-9989

Attn: Rexford M. Morey, L-395

XtremeSpectrum Inc.
1077 30th Street NW, Suite 311
Washington, DC 20007